

REMARKS

The Applicants respectfully request further examination and reconsideration in view of the amendments above and the remarks below. Previously, claims 1-32 were pending in the application, of those claims 1-32 were rejected. Claims 1 and 2 are amended above. Accordingly, claims 1-32 are still pending.

Claim Rejections Under 35 USC §103

Claims 1-32 stand rejected under 35 USC §103(a) as being unpatentable over “Modeling of Two-Phase Microchannel Heat Sinks for VLSI Chips” by Koo et al. (“Koo”), in view of at least U.S. Patent 6,718,781 to Freund (“Freund”). Claims 2, 27 and 28 stand rejected in further view of U.S. Patent 6,182,742 to Takahashi et al. (“Takahashi”), Claims 3, 14-21, 26, 31, and 32 stand rejected in further view of U.S. Patent Publication 2003/0121274 to Wightman (“Wightman”), Claims 5-7 and 9-11 stand rejected in further view of U.S. Patent Publication 2004/0089008 to Tilton et al. (“Tilton”), Claim 8 stands rejected in further view of U.S. Patent 6,775,996 to Cowans (“Cowans”), Claims 12 and 13 stand rejected in further view of U.S. Patent Publication 2004/0040695 to Chessler et al. (“Chessler”), Claims 22-25 stand rejected in further view U.S. Patent 6,023,934 to Gold (“Gold”), and Claims 29 and 30 stand rejected in further view of “A Closed-Loop Electroosmotic Microchannel Cooling System for VLSI Circuits” by Jiang et al. (“Jiang”). The Applicants respectfully traverse the rejections within the Office Action and submit that the various combinations of references relied upon within the Office Action do not make obvious the currently amended claims, as further outlined below.

The primary reference combination relied upon to show obviousness of the claimed invention is that of Koo in view of Freund as applied to claim 1.

The above amendment to claim 1 specifically recites that the pressure of the flowing fluid is adjusted by adjusting an operating condition of the pump in response to a changed property of the heat-generating device or the cooling system. Within the Office Action, it is stated (FIG. references omitted),

Koo discloses applicant’s basic inventive concept, a method of cooling a heat-generating device using a pump to cause a fluid to flow in a sealed cooling system including at least one heat exchanger and having a heat rejector, and wherein the apparatus’ fluid remains sealed within the cooling system, substantially as claimed.

The Office Action further contends in rejection of claims 2, 27 and 28,

Koo as modified by Freund does not disclose adjusting the pressure of the refrigerating fluid is adjusted in the system by adjusting the operating conditions of the pump in response to the change in the temperature of the fluid.

The Office Action further states in rejection of claims 2, 27 and 28 (FIG. references omitted),

Takahashi teaches adjusting pressure of the refrigerating fluid in a cooling apparatus by adjusting the operating conditions of the pump in response to the change in the temperature of the fluid.

The Applicants respectfully disagree, Takahashi teaches a cooling apparatus for use in an electronic system for providing uninterrupted operation capability. In Takahashi, the electronic system typically comprises computers such as large main frame computers. Takahashi relies on a controlled three-way valve 1130A, and controlling the flow of a cooling liquid through the three-way valve 1130A, to adjust the temperature of the cooling liquid. (Takahashi, column 3, lines 33-46). Neither Takahashi nor does the combination of Koo, Freund and Takahashi teach or suggest adjusting pressure of the refrigerating fluid in a cooling apparatus by adjusting the operating conditions of the pump in response to the change in the temperature of the fluid, as claimed. Indeed the word "pressure" is not mentioned or stated in Takahashi. For at least these reasons, claim 1 is allowable over the teachings of Koo in view of Freund and Takahashi.

Claim 4 depends from claim 1, which is allowable over Koo in view of Freund for the reasons presented above. Thus, claim 4 is allowable as being dependent from an allowable base claim.

Claims 2, 27, and 28 are rejected over Koo in view of Freund as applied to claim 1 and further in view of Takahashi. Claims 2, 27 and 28 depend from claim 1, which is allowable over Koo in view of Freund for the reasons presented above. Thus, claims 2, 27, and 28 are allowable as being dependent from an allowable base claim.

Claims 3, 14-21, 26, 31, and 32 are rejected over Koo in view of Freund as applied to claim 1 and further in view of Wightman. Claims 3, 14-21, 26, 31, and 32 depend from claim 1, which is allowable over Koo in view of Freund for the reasons presented above. Thus, claims 3, 14-21, 26, 31, and 32 are allowable as being dependent from an allowable base claim.

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Claims 5-7 and 9-11 are rejected over Koo in view of Freund and further in view of Tilton. Claims 5-7 and 9-11 depend from claim 1, which is allowable over Koo in view of Freund for the reasons presented above. Thus, claims 5-7 and 9-11 are allowable as being dependent from an allowable base claim.

Claim 8 rejected over Koo in view of Freund as applied to claim 1 and further in view of Tilton as applied to claim 5, and still further in view of Cowans. Claim 8 depends from claim 1, which is allowable over Koo in view of Freund for the reasons presented above. Thus, claim 8 is allowable as being dependent from an allowable base claim.

Claims 12 and 13 are rejected over Koo in view of Freund as applied to claim 1 and further in view of Chesser. Claims 12 and 13 depend from claim 1, which is allowable over Koo in view of Freund for the reasons presented above. Thus, claims 12 and 13 are allowable as being dependent from an allowable base claim.

Claims 22-25 are rejected over Koo in view of Freund as applied to claim 1 and further in view of Gold. Claims 22-25 depend from claim 1, which is allowable over Koo in view of Freund for the reasons presented above. Thus, claims 22-25 are allowable as being dependent from an allowable base claim.

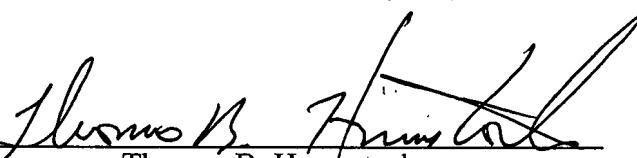
Claims 29 and 30 are rejected over Koo in view of Freund as applied to claim 1 and further in view of Jiang. Claims 29 and 30 depend from claim 1, which is allowable over Koo in view of Freund for the reasons presented above. Thus, Claims 29 and 30 are allowable as being dependent from an allowable base claim.

For the reasons given above, the Applicant respectfully submits that the pending claims 1-32 are in a condition for allowance, and allowance at an early date would be appreciated. If the Examiner has any questions or comments, he is encouraged to call the undersigned at (408) 530-9700 so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,
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By



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